A PRELIMINARY STUDY OF FRUIT HANDLING BY CAPTIVE BORNEAN ORANGUTANS *Pongo pygmaeus pygmaeus* AND THE EFFECTS ON SEED GERMINATION

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ABSTRACT

A preliminary study to investigate the efficacy of Northwest Bornean Orangutans (*Pongo pygmaeus pygmaeus*) as seed dispersers and predators was conducted in Matang Wildlife Centre, Kuching, Sarawak from November 2012 to April 2013. This wildlife facility is one of the official holding centres for orangutans in Malaysian Borneo. Three adult and three juvenile captive orangutans were fed with nine species of locally-available fruits. Approximately 1.5 kg of fruit was given once daily during the study period. Seeds from sieved faecal matter were collected and tested for germination. Three species of small-seeded plants germinated while two medium-seeded plants did not. The seeds from the other four species were damaged and not tested for germination. Fruit and seed-handling behaviour was also observed. A broad range of fruit-processing behaviour such as swallowing, spitting and masticating allows the orangutans to be both seed disperser and predator towards some large-seeded and small-seeded fruits. The morphological characteristics of seeds and age of orangutans appear to influence the fate of seed dispersal.

Keywords: behaviour, fruit-processing, germination, seed dispersal, seed morphology, tropical ecology

INTRODUCTION

Orangutans, with a wide distribution across Borneo and Sumatra, are naturally limited to tropical rainforest although they have been reported in orchards, cultivated fields and gardens (Galdikas, 1988; Nadler et al., 1990). The Bornean species has been classified under three subspecies, namely *P. p. pygmaeus* (Linnaeus), the Northwest Bornean Orangutan, *P. p. wurmbii* (Tiedemann), the Southwest Bornean Orangutan, and *P. p. morio* (Owen), the Northeast Bornean Orangutan (Roos et al., 2014). Orangutans have been reported to utilize more than 500 species of plants (Ancrenaz et al., 2008). The diet breadth of an orangutan is wide and they can consume more than 300 types of fruit available in forests (Harrison, 1962; Galdikas, 1982). They are also known to forage on cultivated fruits such as durians, figs, rambutans and mangoes (Payne & Andau, 1989; Bennett, 1998; Kaplan & Rogers, 2000). Most of their preferred fruits are from large-seeded trees and they may play an important role in dispersal of seasonal tropical fruits in the wild (Galdikas, 1982).

Seed dispersal and seed dissemination, which contributes to the spatial dynamics of plant populations, is important in forest ecology (Cousens et al., 2008). The association of frugivory and seed dispersal has been consistently linked and theoretically framed on the idea of coevolution (Ehrlich & Raven, 1964; Futuyma & Slatkin, 1983; Herrera, 2002). Being the largest primate in Asia, orangutans need large quantities of food for nutrition and energy for their daily activities (Harrison, 1962). Adult orangutans may travel from 300 m to 800 m per day, with a home range of over 6 km^2 (Harrison, 1962; Bennett, 1998). Primates are important seed dispersers because of their varied diet and their ability to travel far which leads to high dispersal distances (Galdikas, 1988; Wehncke et